No. 7600045

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Seed Research Associates, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF seventeen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'5210'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 20th *day of* December *in the year of our Lord one thousand nine hundred and* seventy-six

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

FORM GR-470
(12-15-72)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

FORM APPROVED
OMB NO. 40-R3712

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1. VARIETY NAME OR TEMPORARY DESIGNATION	2. KIND NAME	FOR OFFICIAL USE ONLY
5210	Hard Red Winter Wheat	PV NUMBER 7600045
3. GENUS AND SPECIES NAME	4. FAMILY NAME *(Botanical)*	FILING DATE 2/27/76 — TIME 10 A.M. P.M.
Triticum aestivum	Graminaeae	FEE RECEIVED $ 250.00 $ 250.00 $ 250.00 — BALANCE DUE $ — $ — $ —
	5. DATE OF DETERMINATION 1972	

6. NAME OF APPLICANT(S)	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*	8. TELEPHONE AREA CODE AND NUMBER
Seed Research Associates Inc.	Route 2 Scott City, Kansas 67871	316-872-2807

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. STATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Kansas	June, 1973

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:

Kenneth L. Goertzen, President
Seed Research Associates Inc.
Route 2
Scott City, Kansas, 67871

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

[X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*

[X] 13B. Exhibit B, Botanical Description of the Variety

[X] 13C. Exhibit C, Objective Description of the Variety

[X] 13D. Exhibit D, Data Indicative of Novelty

[X] 13E. Exhibit E, Statement of the Basis of Applicant's Ownership

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations? [X] YES [ ] NO

14C. If "Yes," to 14B, how many generations of production beyond breeder seed? [X] FOUNDATION [X] REGISTERED [X] CERTIFIED

The applicant declares that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable.

The undersigned applicant(s) of this sexually-reproduced novel plant variety believes that the variety is distinct, uniform, and stable as required in Section 41 and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant is informed that false representation herein can jeopardize protection and result in penalties.

2/24/76
(DATE)

Kenneth L Goertzen
(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

EXHIBIT A: Wheat Application No. 7600045 (5210 - tested as Dual V)

Sturdy X SRAI 2370

SRAI 2370 is of unknown ancestry.

A single plant selection was made in the F_4 generation from this cross and increase of 5210 was from this single plant selection.

Variation in 5210 is no greater than Scout when grown under the same conditions.

Purity of the seed is maintained by roguing and isolation. Breeders seed is maintained from increased seed from this original single plant selection. Breeders seed is increased from selections made from this line that exhibit the varietal characteristics of ~~Dual V~~ 5210.

No known variants.

13A Origin & Breeding History of 5210

Sturdy X SRAI 2370

SRAI 2370 is of unknown ancestry.

A single plant selection was made in the F_4 generation and increase of 5210 was from this single plant selection.

Uniformity is equal to Scout when grown under the same conditions.

Purity of the seed is maintained by roguing and isolation. Breeders seed is maintained from increased seed from this original single plant selection .

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At maturity the head is ~~mid~~ dense, oblong, awned, and yellow

The glumes are medium length and wide width. The shoulder is square with acuminate beak.

13B Botanical Description of 5210

The seed is hard red elliptical with short brush, rounded cheek. The crease is narrow and deep.

5210 has prostrate growth habit. The juvenile plant color is yellow green.

At maturity the head is ~~mid~~ mid dense, oblong, awned, and yellow

The glumes are medium length and wide width. The shoulder is square with acuminate beak.

* Letter of April 25, 76

13ØB Objective Description of 5210

2.6 days earlier heading than Eagle
5.3 inches shorter height than Eagle
Superior to Eagle for Hessian fly resistance
Susceptible to soil borne mosaic
Resistant to leaf rust
Good lodging resistance
Straw chaff occasionally with much black in beards and glumes
Bearded
Hard red winter
Excellent functional properties of protein (measured by cc volume per gram of protein)

5210

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Seed Research Associates Inc.

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Route 2, Box 48
Scott City, Kansas 67871

FOR OFFICIAL USE ONLY
PVPO NUMBER 7600045
VARIETY NAME OR TEMPORARY DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____ [2] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____

[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[ ][ ][ ] FIRST FLOWERING [ ][ ][ ] LAST FLOWERING

4. MATURITY (*50% Flowering*):
[0][2] NO. OF DAYS *EARLIER* THAN (KIN 1974) [7] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[ ][ ] NO. OF DAYS *LATER* THAN [ ] 4 = LEMHI 5 = NUGAINES 6 = LEEDS 7 = Eagle

5. PLANT HEIGHT (*From soil level to top of head*):
[ ][6][9] CM. HIGH
[ ][ ] CM. TALLER THAN [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[1][3] CM. SHORTER THAN [7] 4 = LEMHI 5 = NUGAINES 6 = LEEDS 7 = Eagle

6. PLANT COLOR AT BOOTING (*See reverse*):
[ ] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom: 1 = ABSENT 2 = PRESENT
[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[0][3] NO. OF NODES (*Originating from node above ground*)
[1][4] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[ ] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[ ] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[ ] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[0][8] MM. LEAF WIDTH (*First leaf below flag leaf*)
[3][0] CM. LEAF LENGTH (*First leaf below flag leaf*):

FORM GR-470-6 (REVERSE) PI 415 760045

11. HEAD:

[2] Density: 1 = LAX 2 = Mid DENSE

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) oblong

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[2] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[0][9] CM. LENGTH [1][0] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[3] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 3 = WIDE (CA. 4 mm.)

[1] 1 Glabrous 2 Pubescent

[4] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[1] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[3] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[1] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[ ] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[0][7] MM. LENGTH [0][3] MM. WIDTH [3][3] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[3] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] STEM RUST (Races) _____ [2] LEAF RUST (Races) _____ [0] STRIPE RUST (Races) _____ [0] LOOSE SMUT

[0] POWDERY MILDEW [0] BUNT [1] OTHER (Specify) Soil borne mosaic

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY [0] APHID (Bydv.) [0] GREEN BUG [0] CEREAL LEAF BEETL

[ ] OTHER (Specify) _____ HESSIAN FLY RACES: [ ] GP [ ] A [ ] B [ ] C [ ] D [ ] E [ ] F [ ] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering		Seed size	
Leaf size		Seed shape	
Leaf color		Coleoptile elongation	
Leaf carriage		Seedling pigmentation	

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this f

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technic Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

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EXHIBIT D: Wheat Application No. 7600045 (5210 - tested as Dual V)

The most similar variety is Eagle. 5210 and Eagle both have excellent functional properties of the protein.

Some differences are indicated in the table below and these are taken from Kansas Intrastate Nursery data 1974 - Table 2 & 4 (These tables were enclosed with the application)

	Eagle	5210
headed	2.6 days later than 5210	2.6 days earlier than Eagle
Height	normal (32.8 inches)	semi dwarf (27.5 inches)
Hessian Fly	Susceptible	Some resistance
Protein %	12.3% (10 station average)	13.4% (10 station average)
Lodging resistance	Less res. than 5210	Better resistance than Eagle

13E Ownership 5210

Dixie Portland Flour Mill will be producing this wheat under contract for grain. It's ability to produce moderately high protein and gluten of excellent functional properties will be utilized in blends with poorer quality wheats.

At present ownership of 5210 will remain with Seed Research Associates and seed stocks will be produced by Seed Research Associates.

Table 4. Additional information on the 1974 KIN hard wheat entries.

1974 Entry No.	Kind	Headed	Height inches	Hessian fly Response in GH	Hessian fly Mo. %	Hessian fly Ks. %	Bunt %	SBM	Leaf rust response	WSMV rating response	Lodging rating	Shattering seeds per foot
1	Parker	-2.0	33.0	R	10	0	80	S	S	5	3.7	10
2	Eagle	0	32.8	S	50	4	75	S	S	3	3.7	4
3	Nicoma	-3.9	33.3	S	50	0	80	S	S	7	3.7	6
4	Baca	0	34.7	S	0	9	78	S	S	4	3.4	6
5	W 332	+2.6	34.7	S	0	13	70	S	R + S	5	3.2	5
6	Tam W-101	-0.7	27.5	S	10	64	0	S	S	2	2.1	8
7	Clark's	+1.5	38.0	MR	10	13	2	S	MR	9	2.7	5
8	691402	+2.6	37.7	S	50	9	3	S	MR	3	2.6	8
9	Kaw	-1.6	35.4	MS	0	5	4	S	S	6	4.4	6
10	71077	-2.7	34.9	MS	50	7	75	S	MS	5	3.5	5
11	70H208	-1.1	33.7	R	20	0	78	S	S	4	2.8	4
12	70H210	-0.4	33.9	R	10	0	80	S	S	3	2.8	8
13	F 7173	+2.1	30.6	MS	0	21	0	S	MR	7	1.0	8
14	F 7171	+0.7	29.0	S	0	0	2	S	MS	7	3.7	5
15	Tam W-103	-2.8	25.5	S	0	0	20	S	S	4	2.8	8
16	73112	-1.1	30.3	S	30	9	94	R	MR	3	1.9	6
17	73114	-1.9	30.8	S	0	0	80	R	MR	3	1.9	9
18	73165	-3.1	30.3	S	0	0	80	R	MR	3	2.3	4
19	73167	-1.6	29.9	S	0	5	92	R	MR	3	2.2	7
20	73168	-1.1	30.3	S	0	6	85	R	MR	4	2.6	8
21	C 4	+3.3	29.7	R	0	0	85	MS	MR	4	4.4	7
22	C 502	+4.0	29.0	R	0	0	88	S	S	6	4.8	9
23	Osage	+1.3	34.0	S	30	6	60	S	R + S	4	2.0	5
24	Plain V	-3.9	27.4	S	0	7	80	R	S ?	5	1.0	15 ?
25	Dual V (5210)	-2.6	27.5	MS	0	0	62	S	MR	6	1.3	5
26	Dual VI	-0.4	29.5	MS	0	9	85	S	S	7	1.7	9
27	Dual VII	-2.4	26.8	MS	0	0	85	S	S	6	1.3	5

(Continued on next page)

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CHEMICAL, MILLING, AND BAKING DATA FOR THE KANSAS INTRASTATE NURSERY COMPOSITES OF HARD WINTER WHEAT VARIETIES HARVESTED IN 1974

Chemical, milling, and baking data for the Kansas Intrastate Nursery composites of hard winter wheat progenies harvested in 1974 are given in Table 1. Mixograms of 10-g. flour samples are reproduced in Figures 1 and 2.

Each composite sample was made up of 400 grams of each entry from each of five stations in the eastern half and five stations in the western half of Kansas. Stations in the eastern half included Parsons, Hutchinson, Manhattan, Powhattan, and Belleville. Those in the western half included Minneola, Garden City, Tribune, Hays, and Colby.

When producing a continuous phase of protein during mixing, protein content becomes increasingly limiting as it decreases below about 12%, so that mixing time increases as protein content decreases below about 12%. Thus, when flour protein content is below 12%, mixing time should be decreased about 12% for each 1% of protein below 12% before comparing mixing times of varieties.

KS691402, KS73114, KS73165, Cargill 4, Dual VI, and Dual VII have promising overall quality characteristics (functional properties). Questionable milling properties prevent Funk 7173 from being promising.

Dual V is particularly promising. Although Plainsman V has outstanding protein content, it is not evaluated as particularly promising because of its questionably long mixing time.

KS70H208 is the best of the two Ottawa/5 Scout selections because of higher protein content and longer mixing time.

Referring to the CIMMYT/Scout selections, KS73112 and KS73167 were not evaluated as promising because their protein contents were relatively low. KS73165 is the best of the two promising CIMMYT/Scout selections because of higher protein content and longer mixing time.

5210 tested as Dual V

K. F. Finney, M. D. Shogren, L. C. Bolte, J. D. Hubbard, B. M. Eichman, J. A. Jatko, and F. L. Smith

Hard Winter Wheat Quality Research Unit, ARS
U.S. Grain Marketing Research Center
1515 College Avenue
Manhattan, Kansas 66502
February 18, 1975

Table 1. Chemical, Milling, and Baking Data for the Kansas Intrastate Nursery Composites of Hard Winter Wheat Progenies Harvested in 1974. 1/

Variety	C.I. or Sel. No.	Wheat 2/				Flour 2/		Bread-baking Data 2/						
									Mixing Time 3/			Loaf Volume		
		Wt. Per Bu.	Ash	Protein	Flour Yield	Ash	Protein	Absorption	As Rec'd	Corrected To 12.0% P	Crumb Grain	As Rec'd	Corrected To 11.5% P	
		lbs.	%	%	%	%	%	%	min.	min.		cc.	cc.	
Parker	13285	60.9	1.64	12.4	73.2	.36	11.4	61.5	3¾	3½	Q-S	818	824	Q
Eagle	15068	60.2	1.61	12.3	74.2	.37	11.3	65.4	6 ¾	6 ⅛	S	938	953	
Nicoma	13874	60.2	1.64	12.0	73.3	.37	10.9	62.8	6⅝	5¾	S	862	905	
Baca	15891	61.0	1.58	12.0	73.6	.37	10.8	62.0	4⅛	3½	S	873	924	
5 Scout/Agent (W332)	17244	60.9	1.63	12.3	73.4	.38	11.0	62.3	3 ½	3 ⅛	S	890	927	
Tam W-101	15324	58.7	Q 1.71	12.1	71.4 4/	.40	10.9	66.9	5	4⅝	S	868	911	
Clark's Cream		61.1	1.63	12.8	74.0	.36	11.7	64.7	4¼	4⅛	S	845	832	Q-
Kaw/Atlas 50	KS691402	61.7	1.69	13.1	73.5 4/	.37	11.9	62.9	5	-	S	928	900	6/
Kaw	12872	62.6	1.63	11.8	73.9	.37	10.6	59.8	5½	4⅜	S	823	885	
Kaw/Atlas 66	KS71077	62.5	1.62	13.6	71.9 5/	.36	12.3	58.6	2¼	Q -	S	858	810	Q
Ottawa/5 Scout	KS70H208	60.7	1.53	12.2	73.2	.36	11.1	64.8	3 ¼	2 ⅞	S	910	940	
Ottawa/5 Scout	KS70H210	60.5	1.56	11.8	73.8	.37	10.6	62.4	3⅛	2⅝	S	883	952	
Funk 7173		60.3	1.85	12.4	70.7 5/	.42	11.1	64.3	5¾	5⅛	S	908	938	
Funk 7171		56.8	U 1.61	12.2	72.8 4/	.39	11.2	61.2	3 ¼	3	S	890	912	

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Table 1. (cont.), page 2

Variety	C.I. or Sel. No.	Wheat[2] Wt. Per Bu. lbs.	Wheat[2] Ash %	Wheat[2] Protein %	Wheat[2] Flour Yield %	Flour[2] Ash %	Flour[2] Protein %	Bread-baking Data[2] Absorption %	Mixing Time[3] As Rec'd min.	Mixing Time[3] Corrected To 12.0% P min.	Crumb Grain	Loaf Volume As Rec'd cc.	Loaf Volume Corrected To 11.5% P cc.
Tam W-103	TX65A1268	57.1 U	1.62	11.6	71.2 4/	.38	10.5	60.3	3¾	3½	S	833	904
CIMMYT/Scout	KS73112	60.7	1.63	11.6	73.2	.36	10.3	62.4	4 5/6	3 5/6	S	863	955
CIMMYT/Scout	KS73114	60.1	1.61	12.1	73.3	.35	10.8	61.5	3⅞	3⅛	S	893	946 6/
CIMMYT/Scout	KS73165	61.0	1.48	12.6	75.7	.39	11.4	60.9	4⅛	3⅞	S	883	890 6/
CIMMYT/Scout	KS73167	61.6	1.55	11.7	74.4	.34	10.5	61.8	4 5/6	3 3/4	S	885	963
CIMMYT/Scout	KS73168	60.4	1.53	12.4	73.9	.35	11.4	62.2	2⅝	2½	S	897	904
Cargill 4		60.6	1.73	12.4	74.8	.37	11.3	61.9	5½	5	S	918	933 6/
Cargill 502		56.8 U	1.65	11.9	69.3 4/	.41	10.8	62.1	5 5/6	4 5/6	S	883	941
Osage	17292	61.2	1.55	12.1	74.4	.40	11.0	62.5	2¾	2½	S	909	947
Plainsman V		60.9	1.58	14.4	74.8	.33	13.8	68.3	9⅜ Q	-	S	1066	903
Dual V	5210	59.5	1.76	13.4	73.6	.37	12.6	62.9	5 5/6	-	S	1035	951 7/ No
Dual VI		60.3	1.36	12.3	73.5	.40	11.3	65.8	4½	4⅛	S	900	914 6/
Dual VII		60.0	1.68	13.0	73.5	.37	11.9	66.0	5½	-	S	958	928 6/

1/ Chemical data expressed on a 14% moisture basis.

2/ S, Q, and U - Satisfactory, questionable, and unsatisfactory quality with respect to properties in question. A satisfactory rating is inferred in the absence of a designated one. One unsatisfactory rating, in general, characterizes a variety as undesirable for hard wheat milling and breadmaking purposes. Crumb colors were satisfactory for all entries

3/ Mixing time used in baking is evaluated in conjunction with other mixing properties obtained from the 10-g. mixogram.

4/ Softer than average hard wheat milling properties but entirely satisfactory.

5/ Questionable hard wheat milling properties -- softer than normal.

6/ Promising overall quality characteristics.

7/ Particularly promising overall quality characteristics.

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Table 2. Yield, in percent, of the 1974 KIN hard wheat entries. (See Table 1).

1974 Entry No.	Kind	Eastern Kansas						Western Kansas						10 sta. av.
		Pow-hattan	Man-hattan	Par-sons	Hutch-inson	Belle-ville	5 sta. av.	Hays	Minne-ola	Garden City	Tri-bune	Colby	5 sta. av.	
1	Parker	89	91	103*	87	83	91	99	112*	104	100	105*	104	97
2	Eagle	110	84	97*	78	80	90	104	107*	100	113	101	105	97
3	Nicoma	90	85	107*	85	91	92	88	98	106*	106	95	99	95
4	Baca	101	103	112*	90	95	100	103	103*	94	114*	98	102	101
5	W 332	97	107	83	110	100	99	111	112*	101	95	97	103	101
6	Tam W-101	70	75	110*	93	90	88	100	99	99	84	103	97	92
7	Clark's	94	78	80	70	84	81	73	90	83	91	75	82	82
8	691402	87	76	103*	90	70	85	95	85	89	86	87	88	87
9	Kaw	91	85	77	74	82	82	96	99	85	100	90	94	88
10	71077	111	94	103*	108	98	103	104	100	94	93	86	95	99
11	70H208	114	101	95	94	113	103	105	110*	94	110*	101	104	104
12	70H210	124	93	97*	90	103	101	107	112*	120*	124*	110*	115	108
13	F 7173	100	73	101*	114	104	98	93	103*	92	93	97	96	97
14	F 7171	59	67	97*	90	77	78	83	98	90	88	101	92	85
15	Tam W-103	64	67	91	66	76	73	82	109*	106*	89	111	99	86
16	73112	128	139*	106*	125*	127*	125	119*	109*	119*	119*	113*	116	120
17	73114	116	139*	108*	122*	116	120	120*	102*	119*	108	111*	112	116
18	73165	152*	126*	98*	123*	117	123	117*	100	94	93	108*	102	113
19	73157	125	138*	112*	112	128*	123	127*	106*	113*	112*	109*	113	118
20	73168	125	139*	125*	111	120	124	111	101*	102	93	101	102	113
21	C 4	113	80	112*	111	134*	110	115*	98	112*	96	113*	107	108
22	C 502	73	45	100*	65	80	73	70	96	99	95	113*	95	84
23	Osage	138*	108	104*	130*	142*	124	119	112*	112*	112*	100	111	118
24	Plain V	111	133*	85	134*	119	116	95	80	89	94	95	91	104
25	Dual V (5210)	100	89	85	123*	100	99	91	91	95	96	94	93	96
26	Dual VI	106	79	106*	116	86	99	83	79	96	102	92	90	95
27	Dual VII	80	76	100*	89	84	86	88	91	93	94	93	92	89
Av.		100	100	100	100	100	100	100	100	100	100	100	100	100
L.S.D. (5%)		16.4	22.3	28.0	15.4	19.2	---	8.5	10.9	15.2	14.5	8.3	---	---
Av. bu.		32	33	31	39	22	31.5	38	31	40	41	46	39.3	35.4

000114

Sheet = 1 (33)

74 - 75 HIGH PROT WHEATS GLUTEN FUNCTIONALITY

(15% CONSTANT PROTEIN BASIS)

	SRA	Mix Time	Loaf Volume	Volume/gram of Protein
	LB75124	3.40	1230	55.33
	LB75125	3.30	1200	53.33
	LB75126	3.30	1100	46.67
	LB75127	4.20	1150	50.00
	LB75128	6.30	1205	53.67
	LB75129	5.00	1080	45.33
	LB75130	5.20	1285	59.00
	LB75131	7.30	1250	56.67
	LB75132	7.15	1150	50.00
5210	LB75133	5.30	1300	60.00
	LB75134	3.40	1280	58.67
	LB75135	7.15	1050	43.33
	LB75136	5.15	1150	50.00
5232	LB75137	5.00	1250	56.67
	LB75138	4.35	1150	50.00
	LB75139	4.25	1150	50.00
	LB75140	4.45	1100	46.67
	LB75143	4.40	1190	52.67
5221	LB75144	6.00	1310	60.67
	LB75145	2.25	1150	50.00
	LB75146	5.25	1130	48.67
	LB75142	4.15	1235	55.67
	~~Control~~	~~4.30~~	~~1010~~	~~40.67~~
	Control	7.00	1145	49.67
	Control	5.05	1140	49.33

The two controls were excellent quality spring wheats.